J. New York Entomol. Soc. 106(2–3):109–113, 1998

THE LARVA OF *HYPENA MANALIS* (LEPIDOPTERA: NOCTUIDAE: HYPENINAE)

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Abstract.—The larval food plant of *Hypena manalis* (Walker) proves to be bog hemp, *Boehmeria cylindrica* (L.). Partly grown larvae rejected stinging nettle, *Urtica dioica* (L.). The mature larva of *H. manalis* is described and illustrated. It is compared to larvae of *H. bijugalis*, *H. baltimoralis*, *H. madefactalis*, and *H. humuli*.

Late at night in early July, while netting moths with the aid of a headlamp, a *Hypena manalis* (Walker) female was flushed from a clump of vegetation in a *Phalaris* swamp near Albany, New York. On closer inspection the clump was determined to contain *Boehmeria cylindrica* (L.), *Asclepias incarnata* L., *Typha angustifolia* L., *Equisetum fluviatile* L., and *Phalaris drundinacea* L. The moth was caged with a leaf of each plant. *Hypena* species are known to be monophagous or oligophagous. The captive moth oviposited readily on everything, but only the *Boehmeria cylindrica* [Urticaeae] was fed upon by the first instar. Partly grown larvae were offered but refused the related *Urtica dioica* L.

We are treating *Bomolocha* Hübner (1816) and *Hypena* Schrank (1802) as synonymous and *Hypena* has priority. The use of either *Bomolocha* or *Hypena* for this assemblage of species has had a checkered history. Both Beck (1960) and Crumb (1934) used the condition of the Abd-3 prolegs to separate *Bomolocha* (proleg present) from *Hypena* (absent). The state of development of the Abd-3 proleg proves variable. Caterpillars of both *H. humuli* (Harris) and *H. manalis* have completely rudimentary Abd-3 prolegs, a feature not shared by the other *Hypena* examined. Among the remaining species examined, *H. madefactalis* has well developed Abd-3 prolegs; *Hypena baltimoralis* and *H. bijugalis* have reduced, but functional Abd-3 prolegs. Forbes (1954) remarked on the intergradation of temperate *Bomolocha* with tropical *Hypena*. In his catalog, Poole (1989) listed *Bomolocha* under *Hypena* bringing the total number of generic synonyms of *Hypena* to eighteen. Lödl (1994) subsequently considered *Dichromia* a valid genus and restored it from synonymy. Lödl added *Trichypena* Joannis to the synonymy and created six new subgenera of *Hypena*.

Hypena humuli feeds on hop, *Humulus lupulus* L., and stinging nettle, *Urtica dioica* [both Urticaceae]. Other known hosts for Nearctic *Hypena* species include: maple (*H. baltimoralis* Guenee), dogwood (*H. bijugalis* Walker), elm (*H. abalienalis* Walker), walnut (*H. madefactalis* Guenee), butternut (*H. sordidula* and *H. madefactalis*), alder (*H. sordidula* Grote), oak and hazel (*H. palparia* Walker), and basswood (*H. deceptalis* Walker). In addition, there are other nettle feeders (*H. californica* Behr, *H. decorata* Smith, *H. modestoides* Poole). Elm is related to nettle suggesting a close relationship of *H. abalienalis* to *H. manalis*. Unfortunately, no *H. abalienalis*

larva was available for comparison. Dyar (1891) described the larva of *H. abalienalis*; he reported a normal complement of prolegs.

Hypena manalis occurs from southern Canada to Florida west to Minnesota, Iowa and Arkansas (Forbes, 1954). The host plant, bog hemp, has a similar distribution, but extends further south to Texas (Fernald, 1950).

MATURE LARVAE OF *HYPENA MANALIS*
(Chaetotaxy follows Hinton, 1946)

Description. *Coloration of living material.* Head light brown with darker brown reticulation extending to stemmata; body grass-green with three obscure darker green dorsal stripes on each side; with yellow intersegmental sutures.

General: Average head width 1.75 mm; average total length (fully extended) 23 mm; abdominal prolegs absent on Abd 3, present on Abd 4th, 5th, 6th, & 10th segments; setae simple; crochets a uniordinal mesoseries, averaging 25 (24–28) on each proleg (N = 8).

Head (Fig. 1): Epicranial suture 0.5 mm long; height of frons 0.5 mm.

Mouthparts: Hyporpharyngeal complex (Fig. 3): spinneret longer than labial palpus, apex lacking setae; stipular seta (S) between prementum and base of labial palpus; distal region of hypopharynx with a patch of fine setae, proximal region bears a single row of ten rather thick spines.

Mandible (Fig. 2): A prominent mesal tooth on oral face.

Thoracic segments: Prothorax (Fig. 5): Cervical shield weakly sclerotized. All setal bases lack pinaculi.

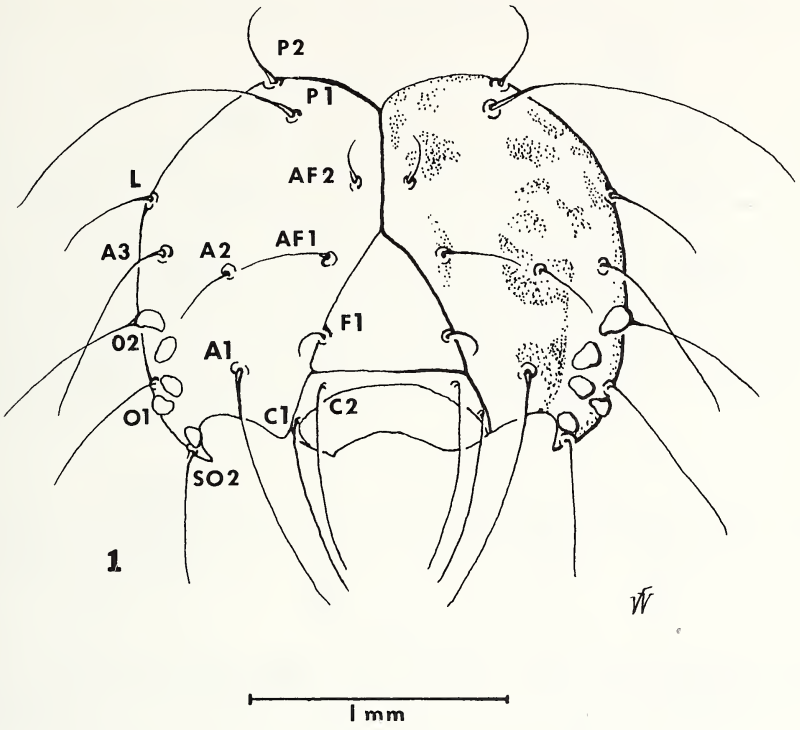
Abdominal segments (Fig. 4): A pinaculum at the base of SD-1 on all abdominal segments.

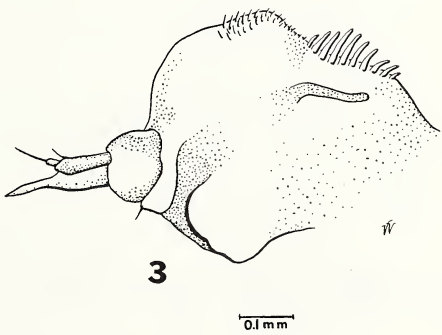
Material examined. Eight specimens, reared ex ovo from female collected by one of the authors (TLM) at Black Creek Swamp, lat. 42.39.53 long. 73.58.01, on 2 July 1994. Reared adults, photographs, and preserved larvae coded tlm 94-44. Mature larvae preserved 1 August 1994.

DIAGNOSIS

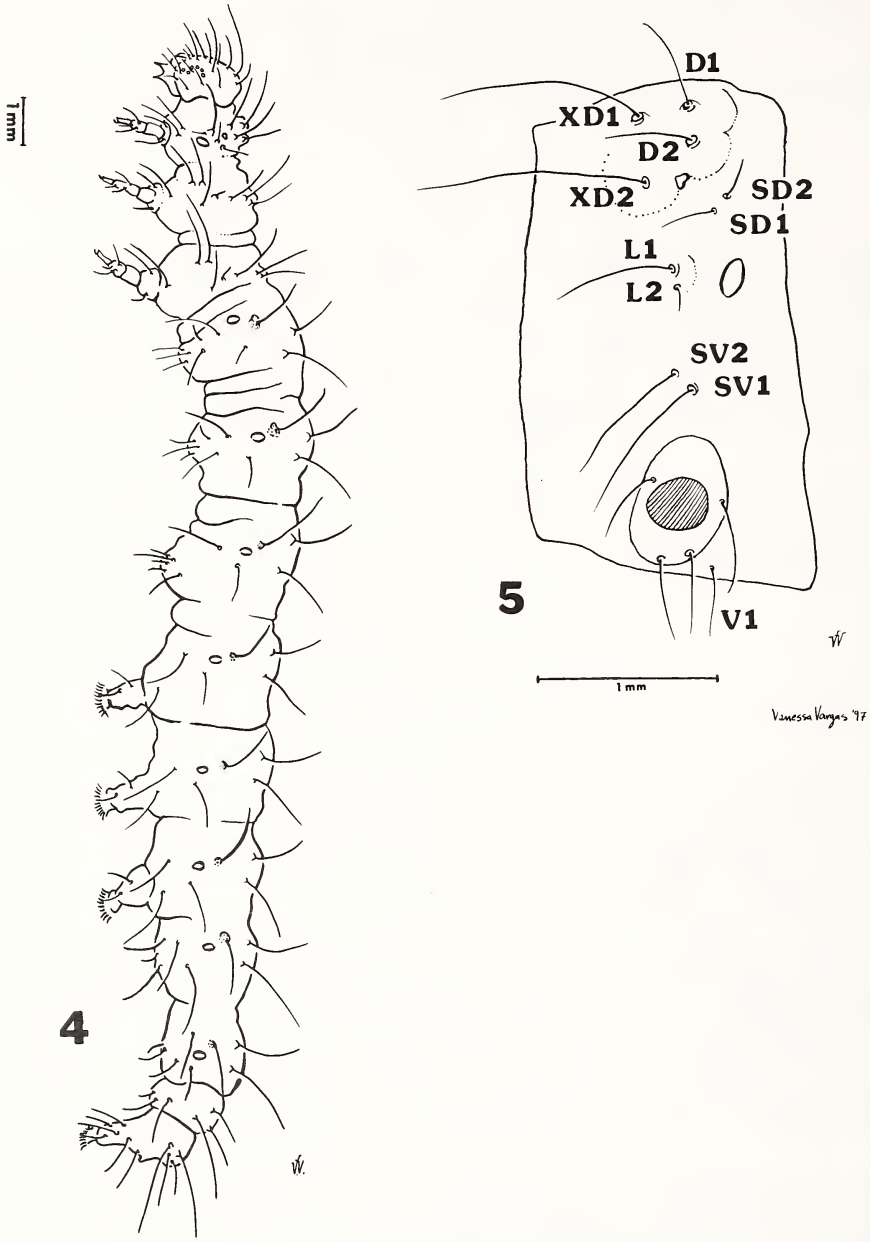
We compared *H. manalis* larvae to those of *H. baltimoralis*, *H. bijugalis*, *H. madefactalis*, and *H. humuli*. *Hypena manalis* and *H. humuli* were the only other ones with Abd-3 prolegs absent. *Hypena bijugalis* does have slightly reduced, but fully functional Abd-3 prolegs. *Hypena humuli* had prominent black setal bases, particularly on the head, and only the top of the head capsule was freckled. *Hypena manalis* had pale setal bases and the head was extensively reticulated, even including the stemmatal region (see Fig. 1).

All five *Hypena* larvae examined had a mesal tooth on the oral face of the mandible. This mandibular structure was most similar between *H. manalis* and *H. humuli*. Their tooth apears as a flat-topped, even-sloped prominence (see Fig. 2). The mesal tooth of *H. bijugalis* is rounded, *H. madefactalis* is flat-topped but parallel-sided, and *H. baltimoralis* has a very shallow tooth. *Hypena baltimoralis* and *H. madefactalis* were the only *Hypena* larvae examined that possessed posterior coronal punctures. The head of *H. baltimoralis* had dark pigment at the base of the D1, D2, L1 and A2 setae. *Hypena madefactalis* had two prominent, black, pigmented patches at





Figs. 1–3. Last instar of *Hypena manalis*. 1. Head capsule, frontal view (scale line = 1.0 mm). 2. Oral face of left mandible (scale line = 0.1 mm). 3. Hypopharyngeal complex, lateral view (scale line = 0.1 mm).



Figs. 4–5. Last instar of *Hypena manalis*. 4. Lateral view of larva (scale line = 1.0 mm). 5. Prothorax, semidiagramatic view of left side from middorsal line to midventral line (scale line = 1.0 mm).

the base of L and P1 on the head in one color morph; the other morph lacked obvious patches.

COLORATION OF LIVING MATERIAL

All five species examined in life had yellowish intersegmental sutures. *H. madefactalis* was unusual in that the larvae were dichromatic: one form had black, heavily pigmented, dorsal pinaculi and two pairs of prominent black spots on the head capsule; the other form lacked the black spots on the head and the body setal bases were reddish and nondescript. Both forms had a prominent white, subdorsal stripe. *Hypena manalis* and *H. bijugalis* had three vague stripes on the dorsal half, lacking in *H. baltimoralis*. *H. manalis* had the most profusely freckled head capsule. *Hypena humuli* possessed a white spiracular stripe that was distinct only on Abd 8–10.

In adult habitus, *H. manalis* is most similar to *H. bijugalis* (see Holland, 1903, The Moth Book, Plate XLII, figs. 3 & 7).

ACKNOWLEDGMENTS

Preserved larvae and reared adults are vouchered in the New York State Museum. Vanessa Vargas produced the illustrations. This is published as Contribution number 785 of the New York State Science Service.

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Received 17 March 1998; accepted 18 August 1998.